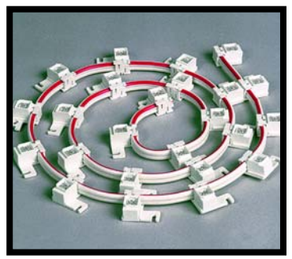
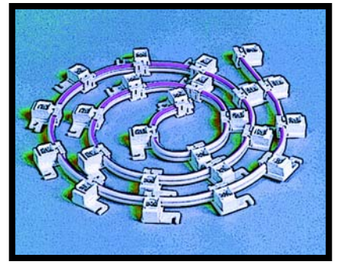
Tetra™

Big neon letters create eye-popping displays that attract customers to strip malls, restaurants, grocery stores, and retail establishments. But the neon bulbs are not energy efficient and are difficult to maintain—excessive vibrations cause them to break frequently. Here is a product that provides a better solution for outdoor displays.

How It Helps: The GE Tetra LED System is more durable and up to 80 percent more energy efficient than standard neon tubes used in outdoor displays. It can also last up to 100,000 hours while delivering maximum efficiency and the same high light output as clear red neon. Longer life means fewer system changes, lower maintenance costs, and fewer disruptions due to burned out tubes. The forward-facing light-emitting diodes (LEDs) are placed in flexible packaging for easy installation in new or retrofit applications. These devices also are more resistant to vibrations than neon tubes.



How It Works: The GE Tetra LED System uses ultrabright LEDs made from aluminum-indium-gallium-phosphide (AlInGaP) and indium-gallium-nitride (InGaN) materials. A metal-organic chemical vapor deposition system called TurboDisc™ is used to fabricate AlInGaP and InGaN wafers. The TurboDisc system is vacuum-loadlocked and uses a high-speed, rotating substrate holder. To produce an epitaxial layer, feed gases are introduced into the reaction chamber, where high temperatures dissociate the gases into constituent elements. These newly liberated reactants combine at the substrate wafer surface, where the proprietary TurboDisc geometry ensures uniform temperature and reactant gradients to form the compound layers.



How Much It Will Cost: The price of the GE Tetra LED System varies, depending on the size and length of the channel letter signage.

When It Will Be Ready: This product is available now. It is being sold for outdoor use only. LED colors include red, blue, cyan, green, red-orange, and yellow-amber. It is shipped in reels that can be cut to size on location. In one notable application, numerous strands of GE Tetra LED Systems were placed on the National Christmas Tree, displayed in Washington, D.C.

Who Is Working On It: GELcore, LLC, a joint venture between GE Lighting and EMCORE Corporation, developed this product. Founded in 1999, the company develops, manufactures, and markets LED-based lighting solutions. In addition to the GE Tetra LED System, its product line includes LEDs for traffic signals, indoor signage, automotive displays, and specialty lighting applications. GELcore has more than 200 employees and occupies more than 100,000 square feet of office space and development/manufacturing facilities. For more information, contact Alex Franco of GELcore at (216) 606-6612 or alex.franco@gelcore.com. The company Web site is www.gelcore.com.

MDA Origins

Through several SBIR contracts, BMDO funded early work at EMCORE to optimize the TurboDisc system for gallium arsenide film growth, and later funded EMCORE's initial research on group III-V compound semiconductors, most notably GaN. BMDO was interested in these components for many uses, including high-temperature electronics, display technologies, ultraviolet laser diodes, devices for the detection and recognition of spacecraft, and space communications.